

EXTRA PRACTICE 40**Addition, Subtraction, and More Multiplication with Radicals**

Use after Section 10.4

Name _____

Examples: Add or subtract. Simplify by collecting like radical terms, if possible.

a) $5\sqrt{6} + 8\sqrt{6} = (5 + 8)\sqrt{6} = 13\sqrt{6}$

b) $8\sqrt{2} - \sqrt{18} = 8\sqrt{2} - \sqrt{9 \cdot 2}$
 $= 8\sqrt{2} - 3\sqrt{2}$
 $= (8 - 3)\sqrt{2} = 5\sqrt{2}$

Multiply.

a) $\sqrt{5}(\sqrt{6} + \sqrt{3}) = \sqrt{5} \cdot \sqrt{6} + \sqrt{5} \cdot \sqrt{3}$
 $= \sqrt{30} + \sqrt{15}$

b) $(3 + \sqrt{2})(9 + \sqrt{2}) = 3 \cdot 9 + 3 \cdot \sqrt{2} + \sqrt{2} \cdot 9 + \sqrt{2} \cdot \sqrt{2}$
 $= 27 + 3\sqrt{2} + 9\sqrt{2} + 2$
 $= 29 + 12\sqrt{2}$

Add or subtract. Simplify by collecting like radical terms, if possible.

1. $4\sqrt{5} + 6\sqrt{5}$ _____ 2. $9\sqrt{3} - 2\sqrt{3}$ _____

3. $3\sqrt{2a} + \sqrt{2a}$ _____ 4. $6\sqrt{11} + 2\sqrt{11} + \sqrt{11}$ _____

5. $\sqrt{x} - \sqrt{4x}$ _____ 6. $2\sqrt{50} + 8\sqrt{2}$ _____

7. $6\sqrt{12} - 3\sqrt{3}$ _____ 8. $\sqrt{80} + \sqrt{20}$ _____

9. $\sqrt{72} - \sqrt{98}$ _____ 10. $\sqrt{125} - 3\sqrt{20} + 4\sqrt{45}$ _____

11. $5\sqrt{24} + 2\sqrt{54} - \sqrt{96}$ _____ 12. $\sqrt{49a} - 5\sqrt{a} + \sqrt{81a}$ _____

EXTRA PRACTICE 40 (continued)
Addition, Subtraction, and More Multiplication with Radicals
Use after Section 10.4

Multiply.

13. $\sqrt{2}(\sqrt{7} + \sqrt{5})$ _____ _ 14. $\sqrt{10}(\sqrt{3} - \sqrt{2})$ _____

15. $(4 + \sqrt{6})(3 + \sqrt{6})$ _____ _ 16. $(8 - \sqrt{10})(5 - \sqrt{10})$ _____

17. $(\sqrt{7} + 1)(\sqrt{7} - 8)$ _____ _ 18. $(\sqrt{3} + 5)(\sqrt{3} - 5)$ _____

19. $(\sqrt{2} - \sqrt{11})(\sqrt{2} + \sqrt{11})$ _____ _ 20. $(6 + 5\sqrt{3})(1 - \sqrt{3})$ _____

21. $(2 - \sqrt{6})(4 + 3\sqrt{6})$ _____ _ 22. $(5 + \sqrt{2})^2$ _____

23. $(8 - \sqrt{3})^2$ _____ _ 24. $(6 - 2\sqrt{5})^2$ _____

25. $(\sqrt{x} + \sqrt{7})^2$ _____ _ 26. $(\sqrt{6} - \sqrt{y})^2$ _____